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ALAMEDA POINT
SSIC NO. 5090.3

May 31, 2002

Richard Weissenborn
Department of Navy
Southwest Division
Naval Facilities Engineering Command
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BASELINE HEALTH RISK ASSESSMENT, DRAFT REMEDIAL INVESTIGATION REPORT, OPERABLE UNIT 5, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Weissenborn:

The Department of Toxic Substances Control (DTSC) has completed the baseline risk assessment review of the above referenced document prepared by Neptune and Company, IT Corporation, and Environ and submitted by the Navy on December 21, 2001. Attached are our comments. If you have any questions, please contact me at 510-540-3767.

Sincerely,

Marcia Y. Liao

Marcia Y. Liao, Ph.D., CHMM
Hazardous Substances Engineer
Office of Military Facilities

Enclosures

cc: see next page

cc: Michael McClelland, SWDiv
Andrew Dick, SWDiv
Steve Edde, Alameda Point
Anna-Marie Cook, EPA
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Michael John Torrey, RAB Co-Chair
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MEMORANDUM

TO: Marcia Liao
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FROM: James M. Polisini, Ph.D.
Staff Toxicologist
Human and Ecological Risk Division (HERD)

DATE: May 29, 2002

SUBJECT: OPERABLE UNIT 5 REMEDIAL INVESTIGATION REPORT, ALAMEDA POINT (NAS ALAMEDA), ALAMEDA, CA
[PCA 18040 SITE 201210-00 H:40]

Background

We have reviewed the document titled *Operable Unit 5 Remedial Investigation Report, Alameda Point, Alameda, California*, dated December 21, 2001. This report was prepared by Neptune and Company, Inc. of Los Alamos, New Mexico, IT Corporation of Richland, Washington and Environ of Emeryville, California. The title page indicates it was 'Prepared for Southwest Division Naval Facilities Engineering Command' in San Diego, California. This review is in response to your written work request dated February 20, 2002.

NAS Alameda occupies the western third of Alameda Island and has been a military installation since 1930. NAS Alameda occupies 2842 acres of land, water and airspace easement, which includes 1734 acres of land. The majority of the land at Naval Air Station (NAS) Alameda was created by filling existing tidelands with dredged material from San Francisco Bay and the Oakland Inner Harbor.

Operable Unit (OU) 5 is a 42 acre site in the northeastern corner of NAS Alameda. OU5 consists of a housing area with 51 multiple unit structures and open-space park areas. Approximately 40 percent of the area is covered with structures and pavement. The remainder of OU5 is covered with vegetation and soil.

The scope of this Human Health Risk Assessment (HHRA) is parcel 181, the North Coast Guard Housing Area. A time-critical removal action has been performed at two adjacent parcels, Estuary Park (Parcel 182) and Housing Office (Parcel 183), to remove the top two feet of soil with replacement with clean fill. The lateral and vertical extent of the removal action was based on an action level of 1.8 mg benzo(a)pyrene (BaP) equivalents per kg soil. A child development center (Parcel 180) and an elementary school (Parcel 179) are adjacent to Parcel 181.

General Comments

HERD defers to the DTSC Geological Services Unit for assessment of the adequacy of the groundwater sampling (Section 3.4.2.1) and the associated conclusions. However, it appears that the presentation of the benzene and naphthalene groundwater concentrations indicate maxima in the southeast portion of parcel 181.

There appear to be some serious divergence from CalEPA and HERD guidance in the HHRA methodology. We were unable to replicate simple intake calculations, some of the toxicity reference values appear to be less than the most health-protective values available and the Johnson and Ettinger model was not used for evaluation of indoor air exposure. We were unable to perform a complete review of the HHRA because of these differences.

Specific Comments

1. Please consult the Environmental Baseline Survey (EBS) study data (ERM-West, 1995) to evaluate the chemical concentrations in any samples collected in the 'soil staining area' near the intersection of Mayport Circle and Kollmann Circle (Section 2.1, page 2-1). This area is presented on the figure (Figure 1-2) and discussed in the text. The results of previous sampling and analysis (Figure 2-3) do not appear to adequately sample this area. Obvious staining would have been cause for sampling in the EBS program. If no other data are available from the area of staining, this should be identified as a data gap in the text. The EBS program data should be reviewed for parcel 179 and 180. In the event the determination is made, with the concurrence of the DTSC Project Manager, that additional samples would be useful for these parcels, some level of screening should also be performed in parcel 179 and 180.

2. OU5-151, OU5-152 and OU5-153, OU5-154, OU5-162 and OU5-161 are in area of 'soil staining' (Figure 3-1). Please provide a box and whisker plot of the concentrations of these sample locations in relation to the other sample locations in the southeast portion of Parcel 181. Box and whisker plots of sample locations OU5-172, OU5-173 and OU5-174 in Parcel 180 and sample locations OU5-175, OU5-176 and OU5-180 (Figure 3-3) should also be provided. In addition, please explain the exclusion of sample locations OU5-177, OU5-178 and OU5-179 from the figures when these additional sampling locations are listed in the text (Table 3-2, page 3-17). It would appear from other figures (i.e., Figure 4-10 and Figure 4-12) that the latter group of samples is actually within Parcel 181 boundaries and not associated with the Miller Elementary School (Parcel 179).

3. The area of the Time Critical Removal Area (TCRA) is portrayed as approximately 60 percent of the area of Parcel 181 (Figure 2-8). In the event the box and whisker plots requested above indicate some difference in the 'soil staining' area, soil screening for polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) should be performed in the area of the 'soil staining' near the junction of Mayport Circle and Kollmann Circle. Commercial laboratories can provide soil screening concentrations in the range of 1 mg/kg or less.

4. HERD does not accept that an antimony maximum from 4.57 mg/kg to 6.81 mg/kg, a selenium maximum of 35.5 mg/kg, a thallium maximum of 84.7 mg/kg or a vanadium maximum of 84.5 mg/kg are 'ambient' concentrations (Table 4-4). Contrary to the statement in the text, it would appear that inorganic concentrations are 'elevated across OU5' (Section 3.4, page 3-3) unless these maximum concentrations are

scattered at random. Please provide a figure presenting the lateral and vertical locations of antimony, mercury, nickel, selenium, thallium, and vanadium in OU5.

5. Benzene, ethylbenzene, styrene and 1,2-dichlorethane exceeded the Maximum Contaminant Level in groundwater (Section 4.2, page 4-65 and Table 4-6). The Conceptual Site Model (CSM) for groundwater and soil contamination indicates that materials were placed on NAS Alameda prior to filling due to industrial activities and that fill contaminated with PAHs was used to construct the base. Please explain how the presence of styrene and 1,2-dichloroethane in groundwater can be explained based on this CSM. In addition, a deed restriction to prevent use of groundwater should be placed in the area of Parcel 181, once the extent of groundwater contamination is determined.

6. Based on the results of the hydropunch groundwater samples, HERD is willing to accept that the VOCs, mainly benzene, are associated with the historical oil refining activities (Section 4.2, page 4-101). However, that does not explain the presence of styrene and 1,2-dichloroethane in groundwater above MCLs (Section 4.2, page 4-65 and Table 4-6) nor the presence of multiple other chlorinated compounds (Table 5-1). Please provide some plausible explanation for the presence of these chlorinated compounds and other compounds not usually associated with petroleum waste which coincides with the CSM.

7. The Remedial Action Plan (RAP) or Record of Decision (ROD) should contain restrictions such that proposed use of OU5 which would increase exposure to ecological receptors would require further ecological risk assessment (Section 5.1, page 5-1). The RAP for the Western Early Transfer Parcel (WETP) at Mare Island requires remedial action and potential monitoring.

8. HERD disagrees with the conclusion that human activities '...have not affected the soil concentrations of metals.' (Section 5.2.1, page 5-4). Please see Specific Comment number 4 above.

9. Disposal should be added to the primary release mechanisms along with spills and leaks (Figure 5-1). The CSM includes the concept that former oil refinery activities resulted in placement of waste products at NAS Alameda.

10. The concurrence of the San Francisco Regional Water Quality Control Board should be obtained in support of the contention that the groundwater at the site is non-potable (Figure 5-1, footnote 4 and Section 5.3.3.2, page 5-15). In the event that concurrence is obtained, verbally or in writing, the footnote should indicate that concurrence.

11. HERD accepts the depth to groundwater limitation of ground surface to 8 feet was a site- specific exception (Section 5.3.3.1, page 5-14) for parcel 181. HERD default soil depth for HHRAs is 10 feet or groundwater depth.

12. U.S. EPA guidance for HHRAs (RAGS, 1989) does not specify age adjusted intake estimates for any route other than incidental soil ingestion. While this risk assessor agrees that there is no basis for this route-specific distinction other than the much higher incidental soil ingestion exhibited by children, the DTSC Risk Manager should realize that age adjusted intake for other pathways (Tables 5-2 through 5-5) is not a standard process.

13. A Particulate Transfer Factor (PTF) is listed under the exposure assumptions for the inhalation pathway (Table 5-6). No PTF is listed in the inhalation equations provided

(Tables 5-2 through 5-5). Please include the PTF in the inhalation equations or provide a footnote explaining how this factor will be incorporated.

14. Soil adherence factors (SAFs) for adult resident and others (Table 5-6) do not appear to be those recommended by HERD. HERD recommends 0.07 mg/cm^2 as the default SAF for a residential scenario adult, 0.2 mg/cm^2 for residential scenario children and 0.8 mg/cm^2 for construction workers.

15. DTSC has issued default Dermal Absorption Factors for different inorganic elements and organic compounds (PEA Guidance). The more health-protective dermal absorption factor (DAF) should be used in estimating dermal intake for the HHRA (Table 5-6 and Section 5.3.5.3, page 5-27).

16. HERD was unable to replicate some of the intake factors presented (Table 5-7). For example the inhalation of vapors ($m^3_{air}/kg_{body\ weight}$ -day) for children is listed as $5.48x10^{-2}$. Dividing the 10 m^3_{air}/day inhalation rate for children by the 15 $kg_{body\ weight}$ yields a result of $6.667x10^{-1}$ $m^3_{air}/kg_{body\ weight}$ - day. Similarly, there is a difference between the intake factor for inhalation of vapors for carcinogenic compounds ($2.35x10^{-2}$ $m^3_{air}/kg_{body\ weight}$ -day) when compared with inhalation of vapors for non-carcinogenic compounds ($2.74x10^{-1}$ $m^3_{air}/kg_{body\ weight}$ -day) for adult residents. Please explain how, given the same inhalation rate and body weight, these values can differ.

17. HERD requires the use of the Johnson and Ettinger model for the evaluation of indoor air (Section 5.4.1.1, page 5-31). While the VLEACH model may be applied to outdoor air exposures, use of the VLEACH model is not acceptable for indoor air. A version of the Johnson and Ettinger model, modified to include the CalEPA-specific cancer slope factors, is available from HERD.

18. The conclusion that there are two areas of Parcel 181 which can be differentiated based on the soil PAH concentration (Section 5.5, page 5-47) argues for development of sample-specific estimates of risk and hazard which can then be contoured to identify areas for consideration of remedial action. HERD strongly recommends that point estimates of risk and/or hazard be used to identify these areas rather than developing two separate estimates (Figure 5-3) of the Exposure Point Concentration (EPC).

19. The BaP equivalent concentration of 77.3 mg/kg in Area 7 0-8 feet BGS (Table 5-13) is among the highest HERD has reviewed outside of manufactured gas plant waste. This comment is provided for the DTSC Risk Manager and no response is required.

20. Please provide correlation analysis, or simple bi-coordinate plots, in support of the contention that the soil exposure concentration developed for the zero to 8 foot soil compartment does not 'correspond' to the regions of shallower elevated BaP-equivalent concentrations. In addition please provide some visual means of assessing the correlation of individual PAHs in the different depth groups in support of this contention.

21. Please provide an analysis similar to that provided for BaP equivalents (Appendix B, Figure B-1 through B-5) in support of the decision to calculate a single EPC for inorganic concentrations across Parcel 181 (Section 5.5, page 5-59).

22. The northern and southern exposure areas (Section 5.5, Figure 5-3) do not appear to coincide with the outline of the TCRA of Parcel 181 (Figure 2-8). Please explain this discrepancy.

23. The cancer slope factors were checked at random and found to differ from those recommended by CalEPA. California has cancer slope factors, used to estimate incremental cancer risk (Table 5-18), which differ from those developed by U.S. EPA for some contaminants. For example, the CalEPA cancer slope factor for benzene via the inhalation route is $1.0x10^{-1}$ $(mg/kg-d)^{-1}$ while the value listed from IRIS for the same exposure route is $2.7x10^{-2}$ $(mg/kg-d)^{-1}$. As another example, chromium VI EPC for zero to 0.5 feet bgs is 6.25 mg/kg (Table 5-17). The cancer slope factor listed for chromium VI (Table 5-18) is not as protective as the cancer slope factor recommended by CalEPA and HERD. The most health-protective value should be used, whether from U.S. EPA IRIS or CalEPA. As an alternative the incremental cancer risk can be calculated using both sets of values and presented to the risk managers.

24. The Toxicity Equivalency Factors (TEFs) for two PAHs (Table 5-19) differ from those recommended by CalEPA and HERD. CalEPA recommends TEFs of 0.1 for benzo(k)fluoranthene rather than 0.01 and 0.01 for chrysene rather than 0.001. The most health protective value should be used. In addition, the cancer slope factors in the same table do not appear to conform to CalEPA and Office of Environmental Health Hazard Assessment (OEHHA) cancer slope factors.

25. The non-cancer toxicity values presented (Table 5-20) were checked at random and found arithmetically correct. No response is required for this comment.

26. The default exposure period for the residential scenario is thirty years. The DTSC Risk Manager should consider that the exposure period for the current resident scenario is six years (Section 5.7.2.1, page 5-127) while the exposure period for future resident scenario is thirty years (Section 5.7.3.1, page 5-130). HERD has no objection to the difference in exposure periods as long as the difference is considered when evaluating remedial action alternatives.

27. HERD did not conduct an intensive review of the results of the HHRA given the problems listed in the Specific Comments above. However, the DTSC Project Manager should be aware that the maximum risk for the future resident scenario in Area 7 is $2x10^{-3}$ (Table 5-46) without the homegrown produce pathway.

Conclusions

There appear to be some serious divergence from CalEPA and HERD guidance documents regarding the preparation of a HHRA. This makes it impossible to give a final determination on the health-protectiveness of this HHRA.

Please have the Responsible Party forward a response to the specific comments listed.

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